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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

August 16, 2010

TO: File NOA
THRU: Ingrid Campbell, Lead WC
FROM: Steve Christensen, Hydrologist SC
RE: Underground Mine Water Treatment, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #3602

SUMMARY:

On July 21, 2010, the Division of Oil, Gas and Mining (the Division of Oil, Gas and Mining) issued West Ridge Resources, Inc. (the Permittee) a Notice of Violation (NOV #10063). NOV #10063 was issued due to the Permittee's failure to design, construct and maintain appropriate sediment control measures that resulted in additional contributions of sediment outside the permit area. Accumulations of coal-fine material were observed within the 'C' Canyon drainage beginning at Utah Pollution Discharge Elimination System (UPDES) Outfall 002. NOV #10063 requires corrective measures in order to abate the violation.

The corrective measures require the Permittee to: immediately begin visual inspections of the mine-water discharge at Outfall 002, submit plans for an underground mine-water monitoring/treatment system, submit plans for the reinstallation of catchments C and E within the 'C' Canyon drainage below the mine site and submit plans that outline the clean-up methods to be utilized from Outfall 002 to catchment E.

The Permittee was issued a violation for the same infraction in January of 2009 (NOV #10033). As a result of that violation, the Permittee was required to construct a series of catchments to collect the accumulated coal fine material. Four catchments were constructed (A, C, E and F). Following clean up of the drainage from Outfall 002 to catchment A, catchments C, E and F were reclaimed in the fall of 2009. Catchment A was retained as a safety measure in the event of future releases of coal fine material.

On August 11th, 2010, the Division of Oil, Gas and Mining received an amendment from the Permittee that addresses the corrective measures outlined in NOV #10063 relative to the

implementation of a visual inspection procedure of the mine-water discharge at UPDES Outfall 002 and an underground mine-water monitoring/treatment system.

The application meets the State of Utah R645-Coal Mining Rules relative to hydrology.

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Water-Quality Standards and Effluent Limitations

The application meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

In addressing the abatement measures of NOV #10063, the Permittee submitted an Attachment 10 to be added to Appendix 5-15 of the approved Mining and Reclamation Plan (MRP). The information provided in Attachment 10 specifically addresses items I and II as listed in the Abatement Measures for NOV #10063.

The first item (I) of the abatement measures calls for the immediate implementation of a visual inspection procedure for the mine-water discharge at Outfall 002. The amendment discusses how on July 22nd, 2010, the Permittee began visual inspections of the mine-water discharge at Outfall 002. The visual inspections are recorded every shift by a qualified company representative. The records are kept in the shift foreman's office and are available for review at anytime.

The second item (II) of the abatement measures outlined the requirements for an underground mine-water monitoring/treatment system. Abatement measure II is comprised of six elements (a-f) that will be discussed individually below.

Item IIa of the abatement measures called for the implementation of a continuous monitoring and automated alarm system that alerts the Permittee when coal fines/sediments in the mine-water discharge have reached action levels. The Permittee has proposed to utilize a HACH Solitax sc sensor (the sensor) that is capable of monitoring both turbidity and total suspended solids (TSS). The sensor will be installed in the 5th Right sump area. The Fifth Right sump area is the collection area for the majority of the water pumped from the West Ridge Mine.

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The digital data collected from the sensor will be sent to the Continuous Mine Monitoring System (Conspec) where it will be analyzed and stored. At all times, an attendant monitors the Conspec on the surface.

Item IIb of the abatement measures required a mechanism/procedure for stopping the mine-water from discharging when action levels are reached. The amendment discusses how an audio and visual alarm will be initiated at the Conspec terminal when the TSS level exceeds 35 milligrams per liter (mg/L). The alarm will be considered the low level alarm. 35 mg/L TSS is the weekly average threshold as outlined in the Permittee's Utah Pollutant Discharge Elimination System (UPDES) permit. If TSS reaches 35 mg/L, the Conspec operator will immediately notify the person in charge who will investigate and take appropriate action. If the TSS levels reach 70 mg/L (the daily maximum as allowed under the UPDES permit), a high level alarm will be initiated. The Conspec operator will immediately notify the responsible person who will take appropriate actions, which could include turning the pumps off and stopping all mine water from discharging.

Item IIc of the abatement measures called for the Permittee to provide documentation of the manufacturer's recommended installation, maintenance and calibration procedures for the water monitoring/treatment system to be utilized. The manual for the Hack Solitax sc sensor is provided as an attachment to the amendment. The manual provides discussion as to installation and recommended maintenance/calibration procedures. The Permittee has committed to following these procedures.

However, the Permittee does discuss the calibration methods to be utilized for the turbidity and TSS sensors. The turbidity calibration will be done using the 800 NTU Turbidity Standard Solutions and Calibration Kit (at. No. 57330-00) standard. Additionally, a zero-point calibration will be done using de-ionized water. Calibration for turbidity will be done on a monthly basis. The Permittee commits to calibration more frequently, "if the sensor is drifting in calibration".

Calibration for TSS will be done using a single point calibration using actual mine-water samples. A grab sample will be taken monthly and sent out to a water lab to determine the TSS value. The lab value will then be divided by the measured value resulting in a new calibration factor. The new factor will then be entered into the sc-100 controller. Calibration for TSS will be done on a monthly basis. If the sensor is drifting in calibration, the Permittee commits to calibration more frequently.

Abatement measure IId required a procedure be established to ensure the continuous operation of the mine-water monitoring/treatment system. The Permittee discusses in the amendment that during times of maintenance or breakdown, visual monitoring will be initiated at UPDES Outfall 002. Visual observations will be taken at least twice a shift and recorded in a logbook. The observer will note any changes in flow, amount of foam, suspended solids, color

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or general condition of the outflow. If any obvious changes are observed, the Permittee commits to cease all mine-water discharge and evaluate the system.

Abatement measure IIe requires the Permittee maintain a hardbound logbook at the mine-site that includes the dates/times/personnel who performed maintenance and calibration on the mine-water monitoring/treatment system. The amendment contains a commitment from the Permittee to maintain such a logbook with all of the aforementioned information.

Abatement measure II f calls for establishing a mine-water monitoring point that will be sampled monthly. The Permittee commits to establishing a water monitoring point on the pre-treatment mine-water. The site is identified as UG-1. Sampling will begin in the fall of 2010. The monthly sampling will include operational field and laboratory parameters. Parameters will include total and dissolved iron, sulfate, alkalinity, total and dissolved solids, field conductivity, field temperature, field dissolved oxygen and field pH. The sample will be collected in the 9th Right between the seal and treatment area. Sampling site UG-1 has been added to Table 7-1, Hydrologic Monitoring Protocols and Locations, in the approved Mining and Reclamation Plan (MRP).

As an additional water treatment measure, the Permittee has proposed to utilize a Schroeder Industries BH10 Multi-Bag Filtration System (the BH10). The BH10 system will be installed near the main ventilation fan. The BH10 is a filtration system that is designed to filter up to 2,000 gallons per minute (gpm) of discharge water. A bypass pipe will be installed to provide for filter changes and cleaning. The Permittee has committed to changing the filters on a regular basis.

Findings:

The application meets the Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules.

RECOMMENDATIONS:

The application is recommended for approval.